 <b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b> <b>ENGINEERING &amp; COMPLIANCE DIVISION</b>	APPL. NO. <b>442931</b>	DATE 5/23/13	PAGE 1 of 12
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**PERMIT TO OPERATE WITHOUT PERMIT TO  
CONSTRUCT**

### **SUMMARY**

The objective of this project is to issue a permit to operate for modifications already made to Tank No. T-1028 (D286), including the addition of knockout pot T-217.

### **COMPANY INFORMATION**

Company Name: Paramount Petroleum Corporation, Facility ID No. 800183  
Mailing Address: 14700 Downey Ave, Paramount, CA 90723  
Equipment Location: 14700 Downey Ave, Paramount, CA 90723  
Contact Person: Kathryn Gleeson, (562) 748-4613

### **EQUIPMENT DESCRIPTION**

**Table 1** shows the proposed Section D permit descriptions for Tank No. T-1028 (D286). Additions to the descriptions are noted in underlines and deletions are noted in ~~strikeouts~~.

**Table 1. Permit Equipment Description**  
**SECTION D: FACILITY DESCRIPTION AND EQUIPMENT SPECIFIC CONDITIONS**


Equipment	ID No.	Conn To	RECLAIM Source Type/ Monitoring Unit	Emissions * And Requirements	Conditions
<b>Process 10 : STORAGE TANKS</b>					
<b>System 1 : FIXED ROOF TANKS</b>					S13.4, S31.4
STORAGE TANK, NO. T-1028, ASPHALT, WITH HEATING COILS, 1000 BBL, WITH A/N: <u>419610 442931</u> <u>POT. KNOCK OUT, T-217, 1000 GALLONS</u>	D286				A63.5, D12.8, D323.3, E448.1, H23.14, K67.2

### **COMPLIANCE RECORD REVIEW**

A query of the AQMD Compliance Database for the past two years (5/1/11 to 5/23/13) identified 10 Notice of Violations (NOVs) and 5 Notices to Comply issued to the Paramount Petroleum Corporation (Facility ID 800183). The compliance database indicates that the facility is currently in compliance with applicable rules and regulations.

### **FEE EVALUATION**

The BCAT for Tank T-1026 (D286) is 214910 (Storage Tank Asphalt <=50,000 gallons), Schedule B. The Schedule B modification fee is \$2181.14, including a 50% penalty for failing to obtain a permit to construct. Fees of \$2543.21 were paid with this application when it was submitted, so \$362.07 will be refunded to the facility. No additional fees are required for this permit application.

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APPLICATION PROCESSING AND CALCULATIONS

## **BACKGROUND/HISTORY**

Tank T-1028 (D286) is a heated asphalt storage tank used for asphalt emulsions. Tank T-1028 has a 1,000 bbl (42,000 gallon) capacity. T-1028 is currently equipped with a 1000-gallon knockout pot, T-217, that was not previously permitted.

The permitting history is provided in **Table 2**. Tank T-1028 (D286) was in operation prior to 1976, but was first permitted in 1988. The only other previous permit action was an administrative change to replace Condition C6.7 with Condition E448.1 to restore the previous wording of the temperature limit condition.

**Table 2. Permitting History for Tank No. T-1028 (D286)**

A/N	Date permit issued	A/N type	A/N status	Facility ID	Description
442931	-	50	21	800183	PO no PC for Tank T-1028 to add T-217 as knockout pot.
419610 {F68795}	9/30/04	63	31	800183	Administrative change to replace Condition C6.7 with Condition E448.1 to allow restore previous wording of temperature limit.
167865 {D01388}	8/8/88	30	31	40803	Original permitting of Tank T-1028, which had been in operation since before 1976.

## **EMISSIONS**

Modifications to add a knockout pot are not expected to cause any increase in emissions. Baseline emissions were not available in the previous application files, so emissions were calculated as part of this permit action.

Emissions were calculated using the EPA TANKS 4.0.9d program. This program does not contain asphalt in its chemical database, so assumptions were made regarding the chemical properties of asphalt to represent a worst-case emissions scenario, resulting in a conservative estimate of emissions.


The physical properties of asphalt used in the TANKS program were taken from Section 4.4.5 – Storage Tank Emissions of the February 2004 document “Emission Factor Documentation for AP-42 Section 11.1 Hot Mix Asphalt Plants”. The report describes the derivation of Antoine’s constants based on averaging those for docosane and tricosane. The Antoine’s constants used are: A=75350.06; B=9.00346. The vapor molecular weight of asphalt is assumed to be 105 lb/lb-mol. A liquid molecular weight of 1000 lb/lb-mol and a liquid density of 9.22 lb/gal were also used in emission calculations. Calculations were performed at the maximum permitted temperature of 350°F (See Condition C6.7).

Using these parameters in the EPA TANKS 4.0.9d program, uncontrolled VOC emissions were estimated at 342.65 lb/yr working losses and 0.0000 lb/yr standing losses; a total of 342.65 lb/yr (0.94 lb/day). (See Attachment A). The TANKS program estimate of vapor pressure is 0.0347 psia at 350°F.

## **RULES EVALUATION**

### **PART 1: SCAQMD REGULATIONS**

#### **Rule 212 Standards for Approving and Issuing Public Notice (Amended 11/14/97)**

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Rule 212 requires public notice for any new or modified permit unit, RECLAIM source or Title V equipment that increases emissions of toxic air contaminants and increases health risk as specified in Rule 212(c)(1) - (c)(3). This existing permit unit is located within 1000 feet from the outer boundary of a school, but the modification will not result in an increase of emissions of air contaminants from the facility or an increase in health risk at any receptor location. Thus, this project does not require notification per Rule 212(c)(1).

This project does not include an emission increase that exceeds any of the daily maximums in Rule 212(g), so the criteria in 212(c)(2) are not met. Since the project does not include an emission increase, it also does not result in MICR over the thresholds in Rule 212(c)(3)(A) and is not likely to pose a potential risk of nuisance per 212(c)(3)(B). The project does not require notice per Rule 212(c)(1), (c)(2) or (c)(3). No Rule 212 public notice is required.

**Rule 401 Visible Emissions (Amended 11/09/01)**

Operation of this permit unit is not expected to result in visible emissions, and the tank must meet Rule 401 requirements, as specified in Condition E448.1. Condition D323.3 requires investigation of any observed visible emissions and implementation of mitigation measures if visible emissions are identified. The tank is currently in compliance with this rule, and is expected to continue to comply with the requirements of this rule.

**Rule 402 Nuisance (Adopted 05/07/76)**

Operation of this permit unit is not expected to result in a public nuisance. The tank is currently in compliance with this rule, and is expected to continue to comply with the requirements of this rule.

**Rule 463 Organic Liquid Storage (Amended 05/06/05)**

Tank T-1028 has a capacity of 1000 bbl (42,000 gallons). This is above the threshold for Rule 463 applicability, since 463(a) states that "This rule applies to any above-ground stationary tank with a capacity of 75,000 liters (19,815 gallons) or greater used for the storage of organic liquids..." However, the tank roof requirements in Rule 463(c) apply to tanks storing organic liquids with a true vapor pressure of 0.5 psia or greater under actual storage conditions. This heated tank stores asphalt, is estimated (using TANKS) to have a vapor pressure of 0.0347 psia at 350°F, significantly below the 0.5 psia limit for Rule 463 applicability.


Condition K67.2 requires that records of throughput and vapor pressure be maintained for the contents of this tank. No other Rule 463 requirements apply to this fixed-roof tank. The facility is currently in compliance with this rule and is expected to continue to comply with this rule.

**Rule 1149 Storage Tank Cleaning and Degassing (Amended 05/02/08)**

Table 1 of Rule 1149 specifies that tanks with a capacity between 500 and 26,420 gallons, such as Tank T-1028, are required to control emissions if the vapor pressure is greater than or equal to 2.6 psia. The vapor pressure of the asphalt stored in Tank T-1028 is less than 2.6 psia (estimated via TANKS to be 0.0347 psia at 350°F), so the control requirements of Rule 1149 do not apply to this tank.

**Rule 1178 Further Reductions of VOC Emissions From Storage Tanks at Petroleum Facilities (Amended 04/07/06)**

Tank T-1028 is not subject to Rule 1178 requirements because although its 42,000 gallon capacity

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is above the Rule 1178 threshold of 19,815 gallons for organic liquid storage [1178(b)], it is used to store asphalt, which has a true vapor pressure less than 0.1 psia under actual storage conditions (estimated via TANKS to be 0.0347 psia at 350°F). Condition K67.2 requires that records of throughput and vapor pressure be maintained for the contents of this tank. No other Rule 1178 requirements apply to this tank. The facility is currently in compliance with this rule and is expected to continue to comply with this rule.

### **Reg XIII New Source Review (Amended 12/06/02)**

#### **Rule 1303 Requirements (Amended 12/6/02)**

New Source Review requirements apply to new, modified or relocated sources. Tank T-1028 is an existing tank that has previously been modified (without a permit) to install a knockout pot. New Source Review requirements include an evaluation of the need for BACT [1303(a)], offsets [1303(b)(2)], and modeling [1303(b)(1)], based on estimated emissions. In addition, the facility must comply with all applicable rules and regulations of the District before a new permit can be issued [1303(b)(4)], as well as demonstrate statewide compliance [1303(b)(5)(B)].

**Rule 1306 Emission Calculations (Amended 12/06/02)** The emissions calculations for determining BACT applicability for modifications are described in Rule 1306(b) and are calculated on a pound per day basis for determination of BACT[1306(d)(1)]. BACT applicability may be based on the maximum rated capacity per 1306(b)(1). For Tank T-1028, emissions are based on a maximum tank throughput of 365 turnovers per year. This is a limiting case beyond what is anticipated or logistically possible for this tank and facility configuration.

Working losses originate from vapor displacement during tank filling. Using a maximum throughput of 365 turnovers per year results in calculated monthly working loss emissions of 342.65 lb/yr. This modification to install a knockout pot will not cause or allow an increase in emissions, so BACT is not required.

Offsets are not required because this permit action will not increase emissions.


Appendix A of Rule 1303 states that modeling is not required for emissions of VOC.

NSR requirements also include the compliance of the facility with all applicable rules and regulations [1303(b)(4)]. Sensitive Zone requirements [1303(b)(3)] do not apply since offset credits are not required for this application, and the Major Polluting Facilities requirements [1303(b)(5)] apply only to new major facilities or major modifications at existing facilities.

The facility is expected to comply with NSR requirements for BACT, modeling and offset requirements, as well as other applicable NSR requirements.

#### **Rule 1325 Federal PM<sub>2.5</sub> New Source Review Program (Adopted 06/03/11)**

Rule 1325 defines a major modification as a physical change that would result in a significant emission increase and a significant net emissions increase of a regulated NSR pollutant from a major polluting facility [Rule 1325(4)(A)]. A significant increase is defined in 1325(b)(13) as an increase equal to or greater than 40 tons/yr nitrogen oxides; 40 tons/yr sulfur dioxide, or 10 tons/yr PM<sub>2.5</sub>. The modification of Tank T-1028 will not result in a significant emission increase, or a significant net emissions increase. Thus, this permit action is not a major modification, and the requirements of Rule 1325 do not apply [Rule 1325(a)].

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#### **Reg XIV Toxics and Other Non-Criteria Pollutants**

##### **Rule 1401: New Source Review of Toxic Air Contaminants (Amended 03/04/05)**

Rule 1401 applies to new, modified or relocated permit units that emit Toxic Air Contaminants (TAC). The modification of Tank T-1028 will not cause any increase in emissions of TACs.

#### **Reg XVII Prevention of Significant Deterioration**

##### **Rule 1701: General (Amended 08/13/99)**

Prevention of Significant Deterioration (PSD) requirements apply to new sources with an increase in PTE of 100 or 250 tons/yr of attainment air contaminants, or existing sources with a significant emission increase, or any net emission increase at a source located within 10 km of a Class I area. The proposed modifications at an existing major source will not increase PTE greater than 100 tons/yr. The facility is not located within 10 km of a Class I area. Thus, the requirements of this rule do not apply to this proposed permit action.

##### **Rule 1714: Prevention of Significant Deterioration for Greenhouse Gases (Adopted 11/05/10)**

The requirements of Rule 1714 apply to preconstruction reviews for greenhouse gases. This rule incorporates by reference several section of 40CFR Part 52.21. This rule requires that a PSD permit be obtained prior to beginning construction of a new stationary source or a major modification to an existing major source. An emission increase of greenhouse gas (GHG), as defined in §52.21(b)(49)(v), is both a significant emissions increase and a significant net emissions increase. Since the modification of this tank will not result in a significant emissions increase, this project is not subject to PSD requirements for GHG.

#### **Reg XXX Title V Permits**

##### **Rule 3000 General (Amended 11/05/10)**

Paramount was issued an initial Title V operating permit on 2/27/09. This application is classified as a minor permit revision as defined in 3000(b)(15).

##### **Rule 3003 Applications (Amended 11/05/10)**

Per 3003(j)(1)(A), minor permit revisions are required to be submitted to the EPA for review.

##### **Rule 3006 Public Participation (Amended 11/05/10)**

Per Rule 3006(b), minor permit revisions are exempt from the public participation requirements of this rule. No requirements apply.


## **PART II: STATE REGULATIONS**

### **CEQA California Environmental Quality Act (Amended 01/01/05)**

This project does not trigger CEQA and is exempt from further CEQA action since it does not have the potential to generate significant adverse environmental impacts. In Form 400-CEQA, the facility did not identify any impacts that may trigger CEQA. Thus, the application is exempt from further CEQA action.

## **PART III: FEDERAL REGULATIONS**

### **40CFR60 Subpart UU Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture (Amended 10/17/00)**

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Subpart UU includes standards for particulate matter for asphalt storage tanks. Tank T-1028 is subject to Subpart UU requirements per Condition H23.14. Tank T-1028 is not allowed to vent gases to the atmosphere with opacity greater than 0 percent (see Condition A63.5). Opacity is monitored per Condition D323.3. The tank is currently in compliance with this regulation and is expected to continue to comply with this regulation.

**40CFR60 Subpart K Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced after June 11, 1973, and prior to May 19, 1978**

Storage tank T-1028 is exempt from Subpart K requirements because it has not been constructed, reconstructed or modified since 1973. No requirements of this regulation apply.

**40CFR63 Subpart AAAAAAA National Emission Standards for Hazardous Air Pollutants for Area Sources: Asphalt Processing and Asphalt Roofing Manufacturing (Amended March 18, 2010)**

Subpart AAAAAAA requirements apply to blowing stills at asphalt processing operations. Storage tank T-1028 is exempt from Subpart AAAAAAA requirements because it is not a blowing still. No requirements of this regulation apply.

## **RECOMMENDATIONS**

Based on the above evaluation, it is recommended that a Permit to Operate be issued with the following conditions.

## **CONDITIONS**

### **SYSTEM CONDITIONS**

S13.4 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	463

**[RULE 463, 5-6-2005]**

[Systems subject to this condition : Process 10, System 1]


S31.4 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 486518 (Diesel Tank Farm Filter):

All open-ended lines shall be equipped with cap, blind flange, plug, or a second valve.

All pressure relief valves shall be connected to a closed vent system.

All new light liquid pumps shall utilize double seals.

All compressors shall be equipped with a seal system with a higher pressure barrier fluid.

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All new valves in VOC service, except those specifically exempted by Rule 1173 and those in heavy liquid service as defined in Rule 1173, shall be bellows seal valves, except as approved by the District, in the following applications: heavy liquid service, control valve, instrument piping/tubing, applications requiring torsional valve stem motion, applications where valve failure could pose safety hazard, retrofits/special applications with space limitations, and valves not commercially available.

All new valves and major components in VOC service as defined by Rule 1173, except those specifically exempted by Rule 1173 and those in heavy liquid service as defined in Rule 1173, shall be distinctly identified from other components through their tag numbers (e.g., numbers ending in the letter "N"), and shall be noted in the records.

All new components in VOC service as defined in Rule 1173, except valves and flanges, shall be inspected quarterly using EPA Reference Method 21. All new valves and flanges in VOC service, except those specifically exempted by Rule 1173, shall be inspected monthly using EPA Reference Method 21.

If 98.0 percent or greater of the new (non-bellows seal) valves and the new flange population inspected is found to leak gaseous or liquid volatile organic compounds at a rate less than 100 ppmv for two consecutive months, then the operator may change to a quarterly inspection program with the approval of the District.

The operator shall revert from quarterly to monthly inspection program if less than 98.0 percent of the new (non-bellows seal) valves and the new flange population inspected is found to leak gaseous or liquid volatile organic compounds at a rate of less than 100 ppmv.


All components in VOC service except for pumps, compressors, and drains, a leak greater than 100 ppm but less than 1,000 ppm measured as methane above background as measured using EPA Method 21, shall be repaired within 14 days of detection. Components shall be defined as any valve, fitting, pressure relief device, diaphragm, hatch, sight-glass, and meter, which are not exempted by Rule 1173. A leak greater than 1,000 ppm shall be repaired according to Rule 1173.

All pumps, compressors, and drains, a leak greater than 500 ppm but less than 1,000 ppm measured as methane above background as measured using EPA Method 21, shall be repaired within 14 days of detection. A leak greater than 1,000 ppm shall be repaired according to Rule 1173.

The operator shall keep records of the monthly inspection (quarterly where applicable), subsequent repair, and reinspection, in a manner approved by the District. Records shall be kept and maintained for at least five years, and shall be made available to the Executive Officer or his authorized representative upon request.

[**RULE 1303(a)(1)-BACT, 5-10-1996**; RULE 1303(a)(1)-BACT, 12-6-2002; **RULE 1303(b)(2)-Offset, 5-10-1996**; RULE 1303(b)(2)-Offset, 12-6-2002]

[Systems subject to this condition : Process 10, System 1

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## DEVICE CONDITIONS

A63.5 The operator shall limit emissions from this equipment as follows:

CONTAMINANT	EMISSIONS LIMIT
Visible emissions	Less than or equal to 0 Percent opacity

**[40CFR 60 Subpart UU, 8-5-1983]**

[Devices subject to this condition : D80, D85, D87, D89, D267, D268, D269, D270, D271, D278, D280, D286, D328, D523, D525, D579]]

D12.8 The operator shall install and maintain a(n) temperature gauge to accurately indicate the temperature of the asphalt stored in or pumped into this tank.

The operator shall record the parameter being monitored at least once per 12 hour shift.

**[RULE 1301, 12-7-1995; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]**

[Devices subject to this condition : D267, D268, D269, D271, D275, D276, D278, D279, D280, D281, D282, D283, D284, D286, D292, D294, D295, D296, D297, D298, D299, D300, D301, D302, D304, D323]

D323.3 The operator shall conduct an inspection for visible emissions from all stacks and other emission points of this equipment whenever there is a public complaint of visible emissions, whenever visible emissions are observed, and on a monthly basis whenever fuel oil is burned. The routine monthly inspection shall be conducted while the equipment is in operation and during daylight hours.


If any visible emissions (not including condensed water vapor) are detected that last more than three minutes in any one hour, the operator shall verify and certify within 24 hours that the equipment causing the emission and any associated air pollution control equipment are operating normally according to their design and standard procedures and under the same conditions under which compliance was achieved in the past, and either:

- 1). Take corrective action(s) that eliminates the visible emissions within 24 hours and report the visible emissions as a potential deviation in accordance with the reporting requirements in Section K of this permit; or
- 2). Have a CARB-certified smoke reader determine compliance with the opacity standard, using EPA Method 9 or the procedures in the CARB manual "Visible Emission Evaluation", within three business days and report any deviations to AQMD.

The operator shall keep the records in accordance with the recordkeeping requirements in Section K of this permit and the following records:

- 1). Stack or emission point identification;



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- 2). Description of any corrective actions taken to abate visible emissions;
- 3). Date and time visible emission was abated; and
- 4). All visible emission observation records by operator or a certified smoke reader.

**[RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 401, 3-2-1984]**

[Devices subject to this condition : D92, D176, D177, D178, D267, D268, D269, D270, D271, D272, D278, D279, D280, D281, D282, D283, D284, D286, D292, D299, D300, D305, D327, D523, D525]]

E448.1 The operator shall comply with the following requirements:

Asphalt stored in or pumped into this tank shall not exceed 350 degrees Fahrenheit or shall be handled in a manner approved by the Executive Officer that does not violate Rule 401.

**[RULE 401, 3-2-1984; RULE 401, 11-9-2001]**

[Devices subject to this condition : D267, D268, D269, D271, D275, D276, D278, D279, D280, D281, D282, D283, D284, D286, D292, D294, D295, D296, D297, D298, D299, D300, D301, D302, D304, D305, D323]]

H23.14 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
PM	40CFR60, SUBPART	UU

**[40CFR60 Subpart UU, 8-5-1983]**


[Devices subject to this condition : D267, D268, D269, D270, D271, D278, D280, D286, D328, D523, D525, D579]]

K67.2 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Throughput and vapor pressure of stored liquid.

**[RULE 1178, 4-7-2006; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 463, 5-6-2005]**

[Devices subject to this condition : D263, D264, D267, D268, D269, D270, D271, D272, D275, D276, D278, D279, D280, D281, D282, D283, D284, D286, D292, D294, D295, D296, D297, D298, D299, D300, D301, D302, D304, D305, D306, D307, D309, D311, D312, D315, D316, D318, D319, D320, D321, D322, D323, D324, D325, D326, D327, D328, D329, D330, D334, D336, D338, D339, D340, D341, D342, D343, D344, D345, D346, D347, D348, D351, D353, D354, D355, D356, D357, D378]

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## ATTACHMENT A: TANKS 4.0.9d Emission Calculation Results for Antoine Asphalt/Tank T1028

### TANKS 4.0.9d

#### Emissions Report - Detail Format

#### Tank Identification and Physical Characteristics

##### Identification

User Identification: T-1028  
 City: Long Beach  
 State: CA  
 Company: Paramount Petroleum Corp.  
 Type of Tank: Vertical Fixed Roof Tank  
 Description: Heated Asphalt Storage Tank

##### Tank Dimensions

Shell Height (ft): 16.00  
 Diameter (ft): 21.50  
 Liquid Height (ft) : 16.00  
 Avg. Liquid Height (ft): 16.00  
 Volume (gallons): 43,453.02  
 Turnovers: 365.00  
 Net Throughput(gal/yr): 15,860,352.84  
 Is Tank Heated (y/n): Y

##### Paint Characteristics

Shell Color/Shade: Gray/Light  
 Shell Condition: Good  
 Roof Color/Shade: Gray/Light  
 Roof Condition: Good

##### Roof Characteristics

Type: Cone  
 Height (ft): 0.06  
 Slope (ft/ft) (Cone Roof): 0.01

##### Breather Vent Settings

Vacuum Settings (psig): 0.00  
 Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

### TANKS 4.0.9d

#### Emissions Report - Detail Format

#### Liquid Contents of Storage Tank

##### T-1028 - Vertical Fixed Roof Tank Long Beach, CA

Mixture/ Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Weight	Basis for Vapor Mol. Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Asphalt Antoiness	All	350.00	350.00	350.00	350.00	0.0347	0.0347	0.0347	105.0000			1,000.00	Option 3: A=75350.06, B=9.00346



**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**T-1028 - Vertical Fixed Roof Tank**  
**Long Beach, CA**

Annual Emission Calculations

Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	7.2610
Vapor Density (lb/cu ft):	0.0004
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	1.0000

Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	7.2610
Tank Diameter (ft):	21.5000
Vapor Space Outage (ft):	0.0200
Tank Shell Height (ft):	16.0000
Average Liquid Height (ft):	16.0000
Roof Outage (ft):	0.0200

Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0200
Roof Height (ft):	0.0600
Roof Slope (ft/ft):	0.0100
Shell Radius (ft):	10.7500

Vapor Density	
Vapor Density (lb/cu ft):	0.0004
Vapor Molecular Weight (lb/lb-mole):	105.0000
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	0.0347
Daily Avg. Liquid Surface Temp. (deg. R):	809.6700
Daily Average Ambient Temp. (deg. F):	64.3083
Ideal Gas Constant R	
(psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	809.6700
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation	
Factor (Btu/sqft day):	1,571.6498

Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	0.0347
Vapor Pressure at Daily Minimum Liquid	
Surface Temperature (psia):	0.0347
Vapor Pressure at Daily Maximum Liquid	
Surface Temperature (psia):	0.0347
Daily Avg. Liquid Surface Temp. (deg R):	809.6700

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
ENGINEERING & COMPLIANCE DIVISION**APPL. NO. **442931**DATE  
5/23/13PAGE  
12 of 12**APPLICATION PROCESSING AND CALCULATIONS**PROCESSED BY  
J. West

CHECKED BY

Daily Min. Liquid Surface Temp. (deg R): 809.6700  
Daily Max. Liquid Surface Temp. (deg R): 809.6700  
Daily Ambient Temp. Range (deg. R): 19.8167

Vented Vapor Saturation Factor  
Vented Vapor Saturation Factor: 1.0000  
Vapor Pressure at Daily Average Liquid:  
Surface Temperature (psia): 0.0347  
Vapor Space Outage (ft): 0.0200

Working Losses (lb): 342.6542  
Vapor Molecular Weight (lb/lb-mole): 105.0000  
Vapor Pressure at Daily Average Liquid  
Surface Temperature (psia): 0.0347  
Annual Net Throughput (gal/yr.): 15,860,352.8362  
Annual Turnovers: 365.0000  
Turnover Factor: 0.2489  
Maximum Liquid Volume (gal): 43,453.0215  
Maximum Liquid Height (ft): 16.0000  
Tank Diameter (ft): 21.5000  
Working Loss Product Factor: 1.0000

Total Losses (lb): 342.6542

**TANKS 4.0.9d****Emissions Report - Detail Format  
Individual Tank Emission Totals****Emissions Report for: Annual****T-1028 - Vertical Fixed Roof Tank  
Long Beach, CA**

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Asphalt Antoinies	342.65	0.00	342.65